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DOE ORDER # 4700.1  
95RF05343

# EG&G ROCKY FLATS

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June 27, 1995

95-RF-05343

Jessie M. Roberson  
Assistant Manager for  
Environmental Restoration  
DOE/RFFO

## PRELIMINARY RESULTS FROM OUTSIDE TANK INVESTIGATION IN OPERABLE UNIT 9 - SGS-191-95

Action: None

The Operable Unit 9 outside tank investigation was completed on May 18, 1995, and is out of the field. Some preliminary investigation results need to be brought to the attention of the Rocky Flats Field Office due to the risk they represent. The most notable result of the field investigation to date is the free phase carbon tetrachloride around tanks T-9 and T-10. This is probably the largest and most significant solvent spill on plant site. The concentrations in the air during drilling were so high (greater than 60 parts per million) that work had to be performed in Level B Personal Protective Equipment which requires the use of supplied air. A one-inch layer of carbon tetrachloride separated out of ground water samples taken from one of the soil borings using Geoprobe.

This free product plume will be a continual source of ground water contamination. Carbon tetrachloride has shown up down gradient in surface water locations and monitoring wells. Further details of field activities at this tank and other tanks can be found in the attachment. The original source of this contamination is probably Operable Unit 8's Individual Hazardous Substance Site 118.1. This whole area is probably a good candidate for early action due to the risk to surface water and ground water even though it will be difficult to remediate.

Presently, not all of the analytical results of the investigation are in. The data summary should supply these additional results when completed. Preliminary results do indicate a wide variety of contaminants around the tanks that are either above Applicable or Relevant and Appropriate Requirements (ARARs) or above preliminary risk based remediation goals. Aside from the carbon tetrachloride at T-9 and T-10 mentioned above, numerous other volatiles and semivolatile compounds can be found around the tanks. These organic compounds appear to be in both surficial samples and borehole samples. In particular, tanks T-2, T-3, T-9, T-10, T-14, T-16, and T-29 had levels above 1000 parts per billion for at least thirty different organic compounds.

Based on partial analytical results, elevated levels of arsenic, cadmium, chromium, cobalt, lead, mercury, selenium, and other metals in the ground water have been found around some of the tanks. The area around tanks T-2 and T-3 had numerous metals in the ground water, and lead and arsenic in the surficial soils.

Very little of the radiological data has been received to date, but based on preliminary analyses, there were elevated levels of plutonium 239/240 in surficial soil sample at T-29. A number of ground water samples had americium, radium, plutonium, gross alpha, and gross beta above ARARs. Elevated radionuclides can be found in the ground water around T-1, T-2, T-3, T-9, and T-10.

### CLASSIFICATION

CNI	
UNCLASSIFIED	X X
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SECRET	

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DATE CLASSIFICATION OFFICE

REPLY TO RFP CC NO:

NA

SECTION ITEM STATUS

PARTIAL/OPEN

X CLOSED

FOR APPROVALS:

RIG & TYPIST INITIALS

cdc/mj dqi


ADMIN RECORD 1/5

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In accordance to the Industrial Area Operable Units' Stop Work Order Implementation Plan dated May 2, 1995, a data summary will be prepared that will summarize the analytical results and field data of the tank investigation. The completed data summary will be completed on November 28, 1995 as indicated in the Implementation Plan. Effort will be made to accelerate this submittal even though it is primarily dependent on laboratory turnaround. Additional work will not be done on Operable Unit 9 due to a reprioritization of funding. This could impact some accelerated actions, since many of the tanks in Operable Unit 9 are potential candidates for early action.

If you have any questions regarding this correspondence, please call me, or C. D. Cowdery at extension 6953.



S. G. Stiger, Director  
Environmental Restoration Program Division  
EG&G Rocky Flats, Inc.

CDC:dql

Orig. and 1 cc - J. M. Roberson

Attachment:  
As stated

cc:  
M. N. Silverman - DOE/RFFO

## OU 9 Tank Investigation Preliminary Field Results

T-8:

Location: North of 771

- ▶ Tank is in use as plenum deluge but will be taken off line.
- ▶ It is likely that contaminants are flushed into tank when testing plenum deluge system.
- ▶ There is ground water intrusion into the tank.
- ▶ Contaminant levels (based on field screening results) were not that high. It is possible that ground water flushed some of the contaminants into aquifer.

T-14 and T-16

Location: Southeast Corner of 774

- ▶ Work had to be delayed because of radiation levels on a grate above tank.
- ▶ Work had to stop because of fixed radiation around tank, 4,488 dpm/100 cm<sup>2</sup>.
- ▶ A pile of unknown chemical compound (white powder) was found in the southern T-16 tank.
- ▶ Smear of sludge in T-16 had radiological activity, two inches of sludge in tank.
- ▶ Field screen indicated carbon tetrachloride concentration in vapor above tank at 7 ppm.
- ▶ T-14 tank has 12 to 18 inches of liquid.

T-9 and T-10

Location: North of Building 776 (Building 730)

- ▶ Drilling was done at a Personal Protective Equipment Level of B due to the presence of carbon tetrachloride; vapor phase levels over 60 ppm were detected.
- ▶ Groundwater samples had a 1 inch layer of dense non-aqueous phase liquid that was probably carbon tetrachloride.
- ▶ The eastern T-9 tank contained approximately 12 inches of liquid.
- ▶ The western T-10 had two feet of clear liquid.
- ▶ The eastern T-10 tank has water and about two inches of sludge. The water samples were below the DOT shipping limit of 2 nCi/ml; however, the initial screen on the sludge indicated a gross alpha activity of 3,000 nCi/g. A four hour count was taken and the gross alpha dropped to 770 nCi/g; the gross beta for the same sample was 59.9 nCi/g.

#### T-29

Location: Northeast of 777, southwest of Solar Pond 207C

- ▶ Tank did not have any residue; however, 6020 dpm/100 cm<sup>2</sup> removable activity was reported from smear taken at bottom of tank.
- ▶ Valve Vault contains 12-14 inches of liquid.

#### T-40

Location: West of 889 Building

- ▶ Unknown black dense non-aqueous phase liquid recovered during drilling.
- ▶ Tank is receiving liquids which is probably from runoff; the water in the tank has elevated radiological levels.

#### T-1

Location: South of Building 122

- ▶ Secondary containment on waste line was breached during drilling.
- ▶ Elevated volatile organic compound was detected during drilling but reading could not be reproduced at a later time.

#### T-2

Location: Underneath Building 123

- ▶ Could not access tank because it was covered by annex to building probably should be tied into D&D of Building 123.

#### T-3

Location : South of Building 123

- ▶ Above Ground Tank - The tank contained no residues and the smears were below background. Recent process information indicates that tank might not have ever been a process waste tank.
- ▶ Below Ground Tank - This tank was not accessible, but samples taken from vaults east of tank and it is probable that one of these vaults is hydraulically connected to tank.
- ▶ Elevated gross alpha and beta detected in water samples around tank.

#### T-11 and T-30

Location: West of Building 707

- ▶ These tanks are essentially clean. Analytical results from boreholes have not been received yet.

T-21 and T-22

Location: East of Building 886

- ▶ Water in the vault was sampled. The samples had a slightly elevated radiological screen. It should be noted that the vault is frequently full of water. The interior tank was full of liquid and contents appeared to be under pressure so only a radiological screen was obtained.

T-24 and T-32

Location: South of Building 881

- ▶ Tanks are in use by 881 laboratory.
- Elevated volatile organic compounds detected during drilling, yet to be identified.

T-7

Location: East of 559

- ▶ There could be some elevated volatile organic compounds. Analytical results are not in.